# Specifications

IDC controls are designed for convection cooling. The shape and size of our heatsinks are the result of thermal analysis and experimentation.

All of our controls have built-in temperature protection. Thermal sensors inside the B8000 controls will activate at a conservative heatsink temperature of 55°C. Thus, IDC controls will not be damaged when overtemperature conditions occur.

A number of factors affect the internal temperature of a control and whether or not it needs additional cooling:

- Ambient temperature
- Air flow
- Duty cycle
- Power delivered (the RMS current output)
- Number of axes per control
- Regenerative energy returned from the load
- Bus voltage (B Series)

Adequate ventilation in the enclosure does a lot to cool our controls. Most often, a single fan in your enclosure or panel will circulate enough air.

## When is a Fan Kit Needed?

Here are a few general guidelines to indicate when a fan kit may be necessary for your high performance application.

B Series Controls:

- With high regenerative loads that do not require an RPACK. See page H-40.
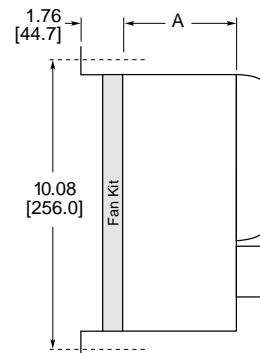- Vertical, high friction, or clamping applications

## Dimensions in [mm]

### Front View (B8001, B8501)



1.05 [26.6]

9.06 [230.1]

Fan Kit

B8001 or B8501 Drive

10.50 [266.7]

3.547 [90.1]
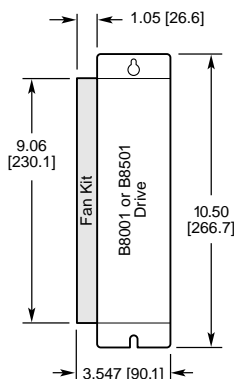
### Side View (B8961, B8962)

See page H-37 for complete mounting dimensions for the B8961/2



1.76 [44.7]

A

10.08 [256.0]

Fan Kit

| Model | A |
|---|---|
| B8961 | 3.73 [94.7] |
| B8962 | 6.79 [179.5] |

# How To Order

| Model | Description |
|---|---|
| FANKIT-1 | 120 VAC Fan Kit |
| FANKIT-2 | 230 VAC Fan Kit |

The Fan Kit is available as an option on the controls listed above by adding an -FK1 or -FK2 suffix to the control model number.

If you are in doubt as to whether a fan kit will be needed for your application, simply leave sufficient panel space for the control with fan kit and test the control without a fan. If your control requires forced air cooling, the fan kit can be purchased separately and easily retrofitted in the field.

# Specifications

When a large inertial load is decelerated or a vertical load is lowered, the mechanical energy that is not dissipated as heat in the actuator or drive is "regenerated" by the motor and transferred back into the drive's power supply. This causes the drive's power supply voltage to increase. Without circuit protection, this voltage increase can damage a drive. Without a means of dissapating this energy, such applications cannot be solved.

All IDC servo drives are fully protected against excessive regenerative energy. First, they are overvoltage and short circuit protected. Second, they are capable of dissipating regenerative energy both internally, and in extreme cases, externally using our model RPACK-1 or RPACK-2. Our drive's LEDs will even indicate when excessive regenerative energy is present in your application.
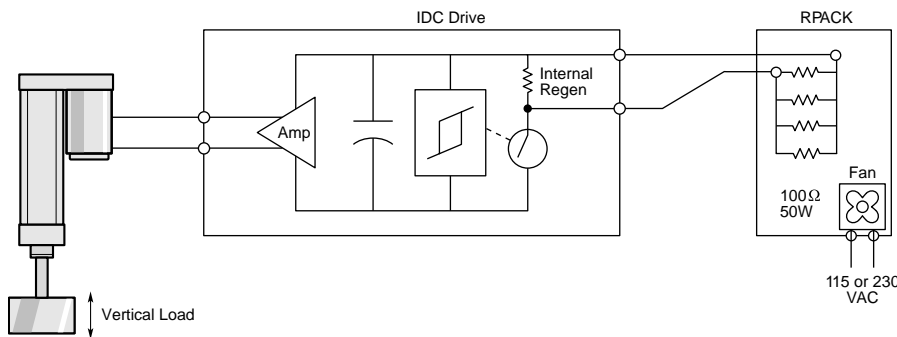
An RPACK allows you to make more aggressive moves in high inertia, low friction applications. Each RPACK provides connections for hook-up to either servo or stepper drives for a total dissipation of 240W continuous and 1000W peak (for 3 seconds).

**Dimensions** in [mm]

**Side View**
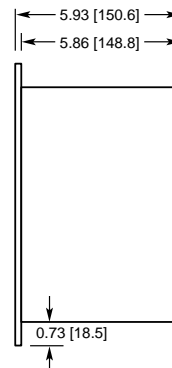


**Front View**





## Regen Capacity (watts or joules)
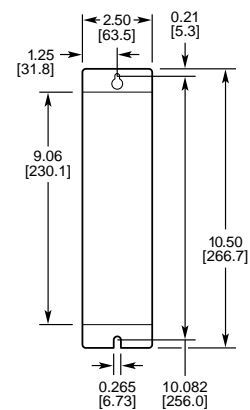
| Regen Capacity (watts or joules) | B8000 Series |
| --- | --- |
| Internal without fan | Total energy storage capacity (max) |
| Continuous | 70 joules (1 axis) |
| Peak (3 sec) | 140 joules (2 axis) |
| Internal with fan | |
| Continuous | 70 joules (1 axis) |
| Peak (3 sec | 140 joules (2 axis |
| RPACK (additional) | |
| Continuous | 240 watts |
| Peak (3 sec) | 1,000 watts |
| When to use an RPACK-1 or RPACK-2 | If drive faults due to overvoltage |
| | If load is vertical with ballscrew |
| | If decelerating large inertial loads |

# How To Order

| Model | Description |
| --- | --- |
| | |
| RPACK-1 | 115 VAC Operation |
| RPACK-2 | 230 VAC Operation |

# Specifications

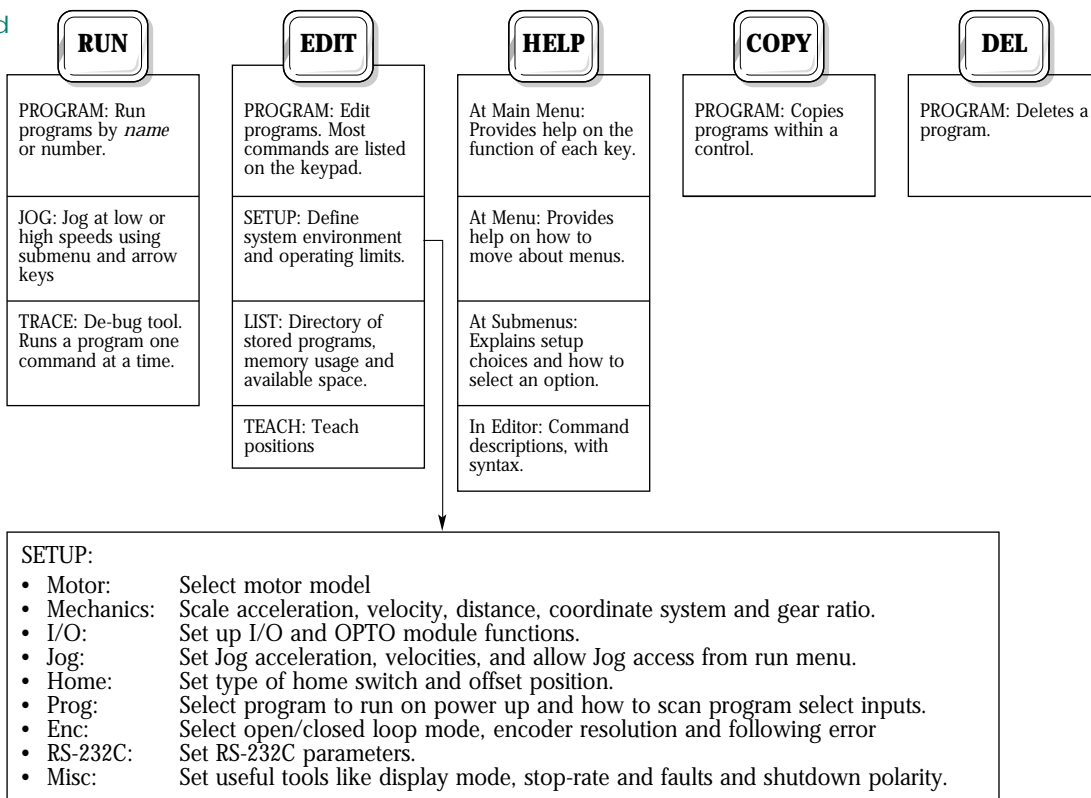All of IDC's programmable Smart Drives and stand-alone motion controllers, which use the IDeal™ programming language, can be programmed and operated from the FP220 removable front panel (keypad). The FP220 makes a great operator-machine interface, as it provides the user with many features and benefits. Some of the features of the FP220 are:

- Remote mountable
- Menu-driven set up and Help
- NEMA 4 (IP65) standard
- Scratch-proof, large keys
- Easy to read, backlit 2 line, 40 character display
- Displays current position and I/O status
- Great for machine diagnostics and troubleshooting
- See page H-37 for mounting information.

## Keypad Menus and Functions

| RUN | EDIT | HELP | COPY | DEL |
|---|---|---|---|---|
| PROGRAM: Run programs by *name* or number. | PROGRAM: Edit programs. Most commands are listed on the keypad. | At Main Menu: Provides help on the function of each key. | PROGRAM: Copies programs within a control. | PROGRAM: Deletes a program. |
| JOG: Jog at low or high speeds using submenu and arrow keys | SETUP: Define system environment and operating limits. | At Menu: Provides help on how to move about menus. | | |
| TRACE: De-bug tool. Runs a program one command at a time. | LIST: Directory of stored programs, memory usage and available space. | At Submenus: Explains setup choices and how to select an option. | | |
| | TEACH: Teach positions | In Editor: Command descriptions, with syntax. | | |

SETUP:
- Motor:       Select motor model
- Mechanics:   Scale acceleration, velocity, distance, coordinate system and gear ratio.
- I/O:         Set up I/O and OPTO module functions.
- Jog:         Set Jog acceleration, velocities, and allow Jog access from run menu.
- Home:        Set type of home switch and offset position.
- Prog:        Select program to run on power up and how to scan program select inputs.
- Enc:         Select open/closed loop mode, encoder resolution and following error
- RS-232C:     Set RS-232C parameters.
- Misc:        Set useful tools like display mode, stop-rate and faults and shutdown polarity.

# How To Order

| Model | Description |
|---|---|
| FP220 | Removable front panel; comes with 6-ft* communications cable |
| | * Longer cables are available. |

*Brushless Servo Systems*

TM99
Thumbwheel
Module

# Specifications

Build your own dedicated, hard-wired operator interface panel using IDC's TM99 thumbwheel module. The TM99 is compatible with all IDeal™ programmable controls— B8961, B8962, S6961, and S6962 Smart Drives, the SmartStep, and 961 and 962 Indexers.

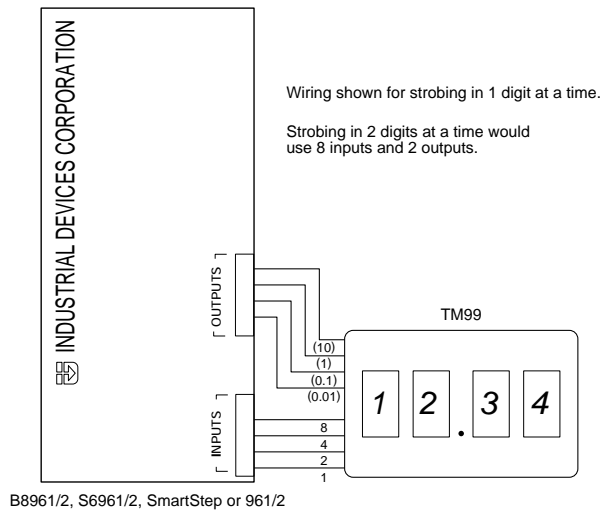The TM99 thumbwheel module is a dedicated data input device used to input:

• variable loop count
• velocity
• distance
• acceleration
• or any variable in an IDeal™ motion program

The TM99's Binary Coded Decimal output is read 1 or 2 decimal digits at a time. Reading one digit at a time uses 4 inputs and 1 output per digit. Reading two digits at a time requires 8 inputs and 1 output per two decimal digits being read.
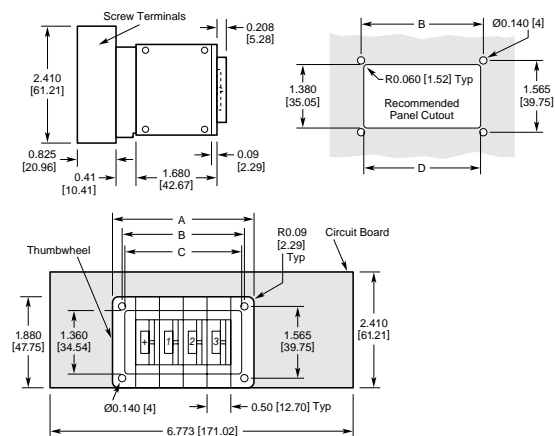
Additional TM99 features:

• Data can be read into multiple variable locations
• Available with ± sign bits and decimal point digits for intuitive operator entry
• Screw terminal connectors for easy wiring

## System Configuration

Wiring shown for strobing in 1 digit at a time.

Strobing in 2 digits at a time would use 8 inputs and 2 outputs.

INDUSTRIAL DEVICES CORPORATION

OUTPUTS

TM99

(10)
(1)
(0.1)
(0.01)

INPUTS
8
4
2
1

$\boxed{1}$ $\boxed{2}$ . $\boxed{3}$ $\boxed{4}$

B8961/2, S6961/2, SmartStep or 961/2

## Mounting Dimensions  in [mm]

Screw Terminals

0.208 [5.28]

2.410 [61.21]

0.825 [20.96]
0.41 [10.41]
1.680 [42.67]
0.09 [2.29]

B
Ø0.140 [4]
1.380 [35.05]
R0.060 [1.52] Typ
Recommended Panel Cutout
1.565 [39.75]
D

A
B
C
Thumbwheel
R0.09 [2.29] Typ
Circuit Board

1.880 [47.75]
1.360 [34.54]
1.565 [39.75]
2.410 [61.21]

Ø0.140 [4]
0.50 [12.70] Typ
6.773 [171.02]

| Dimensions | |
|---|---|
| n = Number of Digits Specified in TM Part Number | |
| A | (n* 0.50) + 0.915 [23.2] |
| B | (n* 0.50) + 0.580 [14.7] |
| C | (n* 0.50) + 0.375 [9.52] |
| D | (n* 0.50) + 0.395 [10.0] |

# How To Order

## Position

9  8  7  6  5  4  3  2  1  0

TM ☐☐☐☐☐☐☐☐☐☐

n =  P – ± sign indicator
9 – 0-9 thumbwheel digit
D – .0-9 thumbwheel digit with decimal point
X – Blank spacer
E – Empty

Thumbwheel digits can be ordered in any combination.

## Ordering Example

Part Number: TM9999XP9D99 will create:

$\boxed{0}$ $\boxed{1}$ $\boxed{2}$ $\boxed{3}$ $\boxed{\phantom{0}}$ $\boxed{+}$ $\boxed{4}$ $\boxed{.5}$ $\boxed{6}$ $\boxed{7}$